

## Integrated Data Encoder for High Data Rate Ka-band Modulator

Completed Technology Project (2014 - 2015)



## Project Introduction

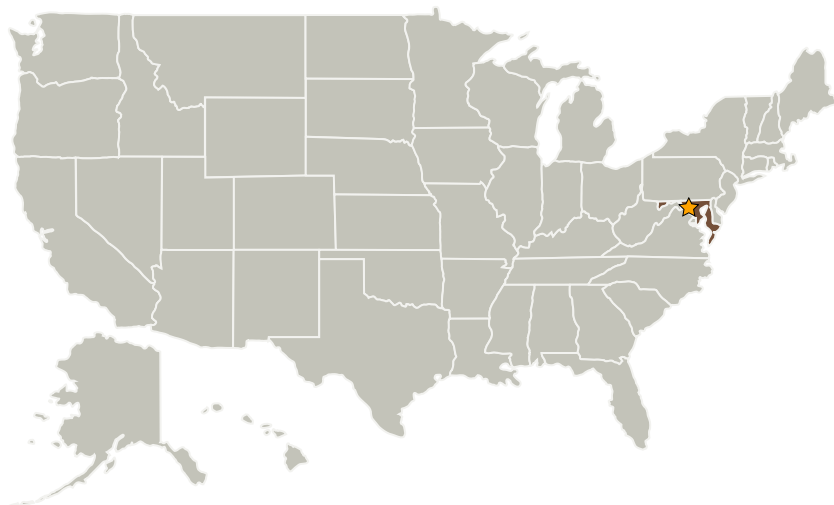
Developing Ka-band communication systems has been a goal of NASA's to utilize the wide bandwidth frequency channel and meet high data rate requirements of science missions. This proposal seeks to develop a high data rate, data encoder for a high data rate Ka-band modulator.

Space communications have traditionally been in S-band (2 GHz) and X-band (7-8 GHz) but as the demand for higher data rates from science missions increases, there has been an increased push to advance Ka-band technologies to utilize the already existing near-Earth Ka-band frequency allocation (25-27 GHz). This project investigates a coding algorithm and develops it for high data rate performance.

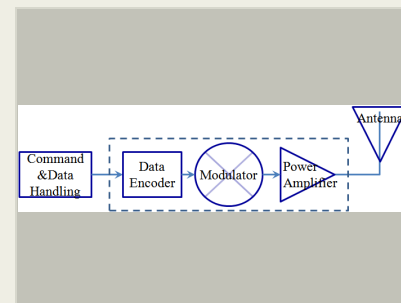
## Anticipated Benefits

This project will benefit all future near-Earth missions requiring downlink bandwidths greater than 10 MHz, enabling high speed encoded data from a compact Ka-band communications transmit system.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



Block Diagram

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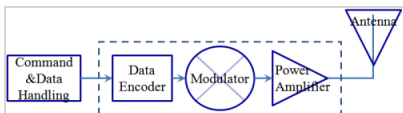
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## Primary U.S. Work Locations

Maryland

## Images



### Block Diagram

Block Diagram

(<https://techport.nasa.gov/image/4186>)

## Links

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(no url provided)

### Project Website:

<http://aetd.gsfc.nasa.gov/>

## Organizational Responsibility

### Responsible Mission Directorate:

Mission Support Directorate (MSD)

### Lead Center / Facility:

Goddard Space Flight Center (GSFC)

### Responsible Program:

Center Independent Research & Development: GSFC IRAD

## Project Management

### Program Manager:

Peter M Hughes

### Project Manager:

Wesley A Powell

### Principal Investigator:

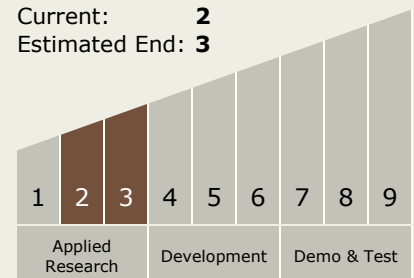
Wei-chung Huang

## Technology Maturity (TRL)

Start: 2

Current: 2

Estimated End: 3



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## Technology Areas

### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.2 Radio Frequency
    - └ TX05.2.7 Innovative RF Technologies